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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/696,847

10/30/2003

Simon Dodd

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11/02/2005

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EXAMINER

DO, AN H

ART UNIT

PAPER NUMBER

2853

DATE MAILED: 11/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

Office Action Summary	Application No.	Applicant(s)	
	10/696,847	DODD ET AL.	
	Examiner	Art Unit	
	An H. Do	2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 August 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) 37-44 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 and 20-33 is/are rejected.
- 7) ☒ Claim(s) 19 and 34-36 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>10/30/03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

The Response filed on 25 August 2005 has been acknowledged.

Election/Restrictions

1. Applicant's election without traverse of Group I, claims 1-36 in the reply filed on 25 August 2005 is acknowledged.
2. Claims 37-44 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 25 August 2005.

Information Disclosure Statement

3. The information disclosure statement (IDS) submitted on 30 October 2003 was filed and is being considered by the examiner.

Specification

4. The abstract of the disclosure is objected to because the term "comprises" should be changed to --includes--. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-18 and 20-33 are rejected under 35 U.S.C. 102(b) as being anticipated by Burke et al (US 6,102,528).

Burke et al disclose in Figures 1-4 the following claimed features:

Regarding claim 1, a fluid ejection device (Figure 1) comprising: a first heater element (12); a second heater element (12) vertically spaced a first distance from the first heater element (12); a first drive transistor (14) associated with the first heater element (12); and a second drive transistor (14) associated with the second heater element (12), the second drive transistor (14) vertically spaced a second distance from the first drive transistor (14), the second distance being different than the first distance (Figure 1 shows a distance "P" between the heating elements 12 is greater than a distance between the transistors 14).

Regarding claim 2, wherein the first distance is greater than the second distance (Figure 1 shows a distance "P" between the heating elements 12 is greater than a distance between the transistors 14).

Regarding claim 3, further comprising a primitive group of drive transistors (Figure 1, each primitive group includes four transistors 14 and two heating elements 12), wherein the primitive group of drive transistors comprises the first and second transistors (Figure 1, transistors 14).

Regarding claim 4, wherein the first distance is less than the second distance (Figure 1 shows a distance "P" between the heating elements 12 is less than a distance between the two outermost transistors 14).

Regarding claim 5, further comprising a first primitive group of drive transistors (Figure 1, each primitive group includes four transistors 14 and two heating elements 12) and an adjacent second primitive group of drive transistors (Figure 1, each primitive group includes four transistors 14 and two heating elements 12), wherein the first

primitive group comprises the first drive transistor and the second primitive group comprises the second drive transistor (Figure 1).

Regarding claim 6, wherein the first distance is a heater element centerline-to-centerline spacing (centerline of heater element 12), and the second distance is a transistor center-to-centerline spacing (centerline of transistor 14).

Regarding claim 7, a fluid ejection device (Figure 1) comprising: a plurality of drive transistors (14); and a corresponding plurality of associated firing heater elements (12); wherein the plurality of drive transistors (14) are spaced more closely with respect to each other than the plurality of associated firing heater elements (12) are spaced with respect to each other (Figure 1).

Regarding claims 8 and 13, further comprising a primitive group (Figure 1, each primitive group includes four transistors 14 and two heating elements 12), the primitive group comprising the plurality of drive transistors (14) and the plurality of firing heater elements (12).

Regarding claims 9 and 14, wherein the plurality of drive transistors (14) comprise contacts (Figure 3, contacts 58-60), the fluid ejection device further comprising: a layer of metal (leads 18) disposed over each of the contacts (58) of the primitive group.

Regarding claims 10 and 15, wherein the layer of metal comprises a power bus (leads 18) connected to each of the plurality of drive transistors (14).

Regarding claims 11 and 16, wherein the layer of metal is disposed over an entire surface of each of the contacts (14) of the primitive group.

Regarding claim 12, wherein the plurality of drive transistors (14) are arranged in a column of drive transistors and the plurality of associated firing heater elements (12) are arranged in a column of firing heater elements alongside the column of drive transistors (Figure 1).

Regarding claim 17, wherein the primitive group is a first primitive group (Figure 1 shows each primitive group includes four transistors 14 and two heating elements 12); and further comprising a second primitive group (Figure 1 shows each primitive group includes four transistors 14 and two heating elements 12) adjacent the first primitive group, the second primitive group comprising a second plurality of drive transistors (14) and a second plurality of firing heater elements (12), wherein the second plurality of drive transistors (14) are spaced more closely with respect to each other than the second plurality of firing heater elements (12) are spaced with respect to each other (See Figure 1).

Regarding claim 18, wherein the first primitive group comprises an adjacent pair of drive transistors spaced a first distance apart from each other; and the first primitive group is separated from the second primitive group a second distance, the second distance being greater than the first distance (Figure 1 shows a distance "P" between the heating elements 12 is greater than a distance between the transistors 14).

Regarding claim 20, a fluid ejection device (Figure 1) comprising: a vertical column of firing heater elements (12) and a vertical column of associated drive transistors (14); wherein a first firing heater element (12) of the vertical column of firing heater elements is vertically separated centerline-to-centerline by a first distance from

an associated first drive transistor (14); and an adjacent second firing heater (12) element of the vertical column of firing heater elements is vertically separated centerline-to-centerline by a second distance from an associated second drive transistor (14), wherein the first distance and second distance are different (the centerline-to-centerline separated distances from the two outermost transistors 14 are different as shown in Figure 1).

Regarding claim 21, further comprising: a primitive group (Figure 1 shows each primitive group includes four transistors 14 and two heating elements 12) comprising a plurality of firing heater elements (12) of the vertical column of firing heater elements and a plurality of associated drive transistors (14) of the vertical column of drive transistors; wherein the primitive group comprises the first and second firing heater elements (12) and the associated first and second drive transistors (14).

Regarding claim 22, wherein the drive transistors (14) of the primitive group are spaced more closely center line-to-centerline along the vertical column of drive transistors than the firing heater elements (14) of the primitive group are spaced from centerline-to-centerline along the vertical column of firing heater elements (Figure 1 shows a distance "P" between the heating elements 12 is greater than a distance between the transistors 14).

Regarding claim 23, wherein the plurality of firing heater elements (12) of the primitive group are uniformly spaced from each other by a distance V1 and the plurality of drive transistors (14) are uniformly spaced from each other by a distance V2, the

distance V2 being less than V1 (Figure 1 shows a distance "P" between the heating elements 12 is greater than a distance between the transistors 14).

Regarding claim 24, wherein the distance V1 provides a fluid ejection device resolution of 1200 dots per inch (column 4, lines 37-41).

Regarding claim 25, further comprising: a primitive group comprising the vertical column of firing heater elements (12) and the vertical column of drive transistors (14); a power bus (leads 18) associated with the primitive group and electrically connected to provide a common power source for all of the plurality of drive transistors (Figure 1); wherein the primitive group comprises the first and second firing heater elements (12) and the associated first and second drive transistors (14).

Regarding claims 26, 29 and 32, wherein the drive transistors (14) of the primitive group are spaced more closely center line-to-centerline along the vertical column of drive transistors than the firing heater elements (12) of the primitive group are spaced centerline-to-centerline along the vertical column of firing heater elements (Figure 1 shows a distance "P" between the heating elements 12 is greater than a distance between the transistors 14).

Regarding claims 27, 30 and 33, wherein the plurality of firing heater elements (12) of the primitive group are uniformly spaced a distance V1 (distance "P") and the plurality of drive transistors (14) are uniformly spaced a distance V2 (distance between the transistors 14), the distance V2 being less than V1 elements (Figure 1 shows a distance "P" between the heating elements 12 is greater than a distance between the transistors 14).

Regarding claim 28, wherein the power bus (leads 18) has a perimeter defining an area, the plurality of drive transistors (14) each have contacts (Figure 3, contacts 58-60) and the contacts of the plurality of drive transistors (14) are all enclosed within the perimeter (Figure 3).

Regarding claim 31, further comprising: a first primitive group comprising a first plurality of firing resistors (12) of the column of firing resistors and a first plurality of associated drive transistors (14) of the column of drive transistors; an adjacent second primitive group comprising a second plurality of firing heater elements (12) of the column of firing heater elements and a second plurality of drive transistors (14) of the column of drive transistors; first and second electrical power buses (leads 18), each power bus (lead 18) associated with the drive transistors of the first or second primitive group respectively and electrically connected to the first or second plurality of drive transistors of the respective first or second primitive group respectively and electrically isolated from the other power bus (Figure 1, leads 18).

Allowable Subject Matter

7. Claims 19 and 34-36 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

The primary reason for the allowance of claim 19 is the inclusion of the limitation of a fluid ejection device that includes a first primitive group having heating elements

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and transistors and a second primitive group having heating elements and transistors, wherein a first spacing between transistors in the first primitive group is different from a second spacing between transistors in the second primitive group. It is this limitation found in the claims, as it is claimed in the combination of, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

The primary reason for the allowance of claims 34-36 is the inclusion of the limitation of a fluid ejection device that includes a first primitive group having heating elements and transistors and a second primitive group having heating elements and transistors, wherein: a lowermost drive transistor of the first primitive group is vertically spaced centerline-to-centerline a distance $V3$ from an uppermost drive transistor of the adjacent second primitive group; and the drive transistors of one of the first or second primitive groups are vertically spaced more closely than the distance $V3$. It is this limitation found in the claims, as it is claimed in the combination of, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

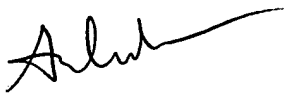
8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Bhaskar et al (US 5,635,968), Gibson et al (US 5,757,394), Saito et al (US 5,774,147) and Chavarria et al (US 6,582,063) all disclose an inkjet recording head having a plurality of heating elements and transistors formed on the substrate.

Contact Information

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to An H. Do whose telephone number is 571-272-2143. The examiner can normally be reached on Monday-Friday (Flexible).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on 571-272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



An H. Do
October 25, 2005